

WHAT IS CLAIMED IS:

1. Branched and coupled polymers based on conjugated dienes or on conjugated dienes and vinylaromatic compounds and on polyfunctional, organic compounds having at least 4 groups which are capable of coupling, wherein the polymers have a molecular weight ratio (M_w/M_n) of 1.0 to 3.0; a weight-average molecular weight (M_w) of 400,000 to 2,000,000, a glass transition temperature (T_G) of -50 to -10°C, an amount of 1,2-vinyl groups of 40 to 80%, based on the diene units present in the polymer, and a degree of coupling of at least 45%, at least 60% of the coupled polymers having a degree of branching of greater than two, with the proviso that the amount by weight of polymers with 4- and more than 4-fold branching, based on 100 g of polymer, is always greater than the amount by weight of polymers with 3-fold branching, and wherein the difference in the solution viscosity of the polymers before and after the coupling is in the range from 100 to 400 (measured with a solution of 0.5 g polymer in 100 ml toluene, determined at 25°C with an Ubbelohde viscometer).
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2. Branched and coupled polymers according to Claim 1, wherein the molecular weight ratio (M_w/M_n) is 1.5 to 2.8, the weight-average molecular weight (M_w) is 600,000 to 1,400,000, the glass transition temperature (T_G) is -40 to -15°C, the amount of 1,2-vinyl groups is 50 to 70% and the degree of coupling is 48 to 80%, and furthermore 70 to 95% of the coupled polymers have a degree of branching of greater than two, the difference in the solution viscosity before and after the coupling is 140 to 300 and the amount by weight of polymers with 4- and more than 4-fold branching is 10-50% greater than the amount of polymers with 3-fold branching.
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3. Process for the preparation of the polymers according to Claim 1,
comprising the steps of polymerizing conjugated dienes or conjugated
dienes with vinylaromatic compounds in the presence of inert organic
solvents and in the presence of organic alkali metal compounds, reacting
the alkali metal-terminated polymer anions formed with organic,
polyfunctional compounds which have at least 4 groups which are capable
of coupling, wherein the molar ratio of polyfunctional compounds
employed to alkali metal-terminated polymer anions is 0.1 to 0.28:1.

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- 10 4. A tire comprising a polymer according to Claim 1.